



ORIGINAL ARTICLE

Instability in Housing and Medical Care Access: The Inequitable Impacts of the COVID-19 Pandemic on U.S. Transgender Populations

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Abstract

Purpose: To assess whether the COVID-19 pandemic has inequitably impacted key social determinants of health (SDoH), specifically employment, housing, and health care, for U.S. transgender populations.

Methods: Between April 13, 2020 and August 3, 2020, we conducted a national, cross-sectional online survey of sexual and gender minority individuals ($N=870$). We used logistic regression to calculate both unadjusted and adjusted odds of unemployment, homelessness/housing instability, and interruptions in medical care owing to the pandemic by gender and gender modality. Adjusted models controlled for age, race/ethnicity, and region.

Results: In adjusted models, transgender and gender diverse people had 2.12 times the odds of reporting homelessness/housing instability and 2.88 times the odds of reporting medical care interruptions compared with cisgender peers. Transgender men, women, and nonbinary people had 4.12, 3.29, and 3.48 times the adjusted odds of interruptions in medical care compared with cisgender men, respectively. We did not observe significant differences in employment.

Conclusions: Findings add empirical support to the hypothesis that socioeconomic consequences of COVID-19 are inequitably impacting transgender people. To contextualize our results and support future research in this area, we present a conceptual model of the short- and long-term impacts of COVID-19 on transgender populations using a framework of stigma as a fundamental cause of health inequities. Our findings emphasize that public health professionals must urgently consider—and intervene to address—the pandemic's SDoH-related impacts on transgender populations.

Keywords: access to care; COVID-19; housing; social determinants of health; stigma; transgender health

Introduction

The COVID-19 pandemic in the United States has reshaped key social determinants of health (SDoH) named in the Healthy People 2030 plan,¹ including economic stability and health care access and quality. COVID-19-related job loss,² housing instability,³ and health care interruptions⁴ have created short-term vulnerability and long-term risk for negative health outcomes along well-known lines of structural inequity.⁵ Transgender (trans) populations experience a variety of SDoH-linked inequities compared with cisgender

(cis) peers, yet less is known about the impact of COVID-19 on trans populations. In the context of COVID-19, SDoH-linked inequalities may exacerbate long-term health inequities,⁶ placing trans populations at risk of widening health disparities.

Research conducted before the COVID-19 pandemic demonstrates how stigma operates as a fundamental SDoH for trans people^{7,8}; structural, interpersonal, and individual level stigma limits access to health care, housing, and employment.⁹ In the 2015 U.S. Transgender Survey, 23% of respondents

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reported not seeking health care because of fear of being mistreated.⁹ This combines with structural transphobia such as gender affirming procedures often being deemed “cosmetic” rather than essential,^{10–12} as well as the scarcity of trans-affirming care nationally.¹³ Stigma also creates housing instability for trans people, who may be faced with refusal to rent, kicked out of family homes, or excluded from shelters.^{12,14–16} In addition to being denied employment owing to being trans, when employed, trans people often face harassment, are denied promotions, or are fired for being trans.^{12,17} As of 2015, U.S. trans populations were estimated to experience a 15% unemployment rate,⁹ three times higher than the general U.S. population at the time.¹⁸ Across each of these outcomes, trans people of color are known to be particularly impacted.¹⁹

In the context of COVID-19, these stigma-linked inequities pose a threat to the immediate and long-term health of trans populations. Stigma-associated SDoH and health inequities can translate into further reduction in socioeconomic status (SES) and into long-term health inequity for trans people. This is visualized in our conceptual model (Fig. 1), adapted from Hatzenbuehler et al.’s model of stigma as a fundamental cause of population health inequities.⁷ The stigma-linked SDoH inequities described previously predispose trans populations to experience exacerbated adverse pandemic-linked SDoH outcomes.²⁰

Research thus far supports this conclusion. One cross-sectional study found that trans individuals were less likely than cis individuals to report access to a primary care provider in the early days of the pandemic.²¹ Another ongoing cohort study found an increased rate of cancellation and/or postponement of gender-affirming surgeries and other procedures among trans and nonbinary Americans.²² The same study noted a 30% unemployment rate for trans participants in July 2020,²² when the overall U.S. unemployment rate was 10.2%.²³ A recent global cross-sectional study of the impact of the COVID-19 pandemic on trans individuals grants additional support to our model; using structural equation modeling, Restar et al. found that socioeconomic loss impact partially mediated a significant relationship between the COVID-19 pandemic environment and poor mental health.²⁴ Furthermore, Restar et al. found that reductions in gender affirming services during the pandemic partially mediated a significant association between socioeconomic loss impact and poor mental health.²⁴

Given the available evidence drawn from both pre-pandemic and COVID-19-concurrent research, we hypothesized that the socioeconomic impacts of COVID-19 in the United States across three key SDoH (employment, housing, and health care) will have disproportionately impacted trans individuals compared with cisgender peers. We tested this hypothesis as one aspect of our conceptual model (Fig. 1) using data from a national, cross-sectional online survey of sexual and gender minority (SGM) adults. Guided by our conceptual model’s synthesis of prior scientific literature, we interpret our findings using theories of stigma as a fundamental cause of population health inequities.

Materials and Methods

Procedures

The COVID-19 Impacts Survey was developed in REDCap, launched online on April 13, 2020, and completed data collection on August 3, 2020. A detailed description of the study design and data collection is presented elsewhere.²⁵ In brief, we conducted an online, cross-sectional survey of SGM adults to understand their experiences during the COVID-19 pandemic. Participants were compensated \$10. All study procedures were reviewed by the Northwestern University IRB and received a designation of exempt owing to no identifiable data being collected.

Measures

Demographics

Age. Age was assessed by asking, “What is your age?”

Race/Ethnicity. Participants were asked, “How do you describe your race or ethnic background?” Response options included (1) American Indian or Alaska Native, (2) Asian, (3) Black or African American, (4) Hispanic or Latino/a/x, (5) Native Hawaiian or Other Pacific Islander, (6) White, (7) Not listed. Participants who selected more than one option were categorized as (8) Multiracial. Individuals who responded “Not Listed” and “Native Hawaiian or Other Pacific Islander” were excluded from analyses because of small sample size ($n = 15$). Race/ethnicity was collapsed into six analytic groups: (1) White, (2) Black, (3) Latinx, (4) Asian, (5) American Indian/Alaska Native, and (6) Multiracial.

Gender. Gender was assessed using two questions. We first assessed *gender identity* by asking “Which of the

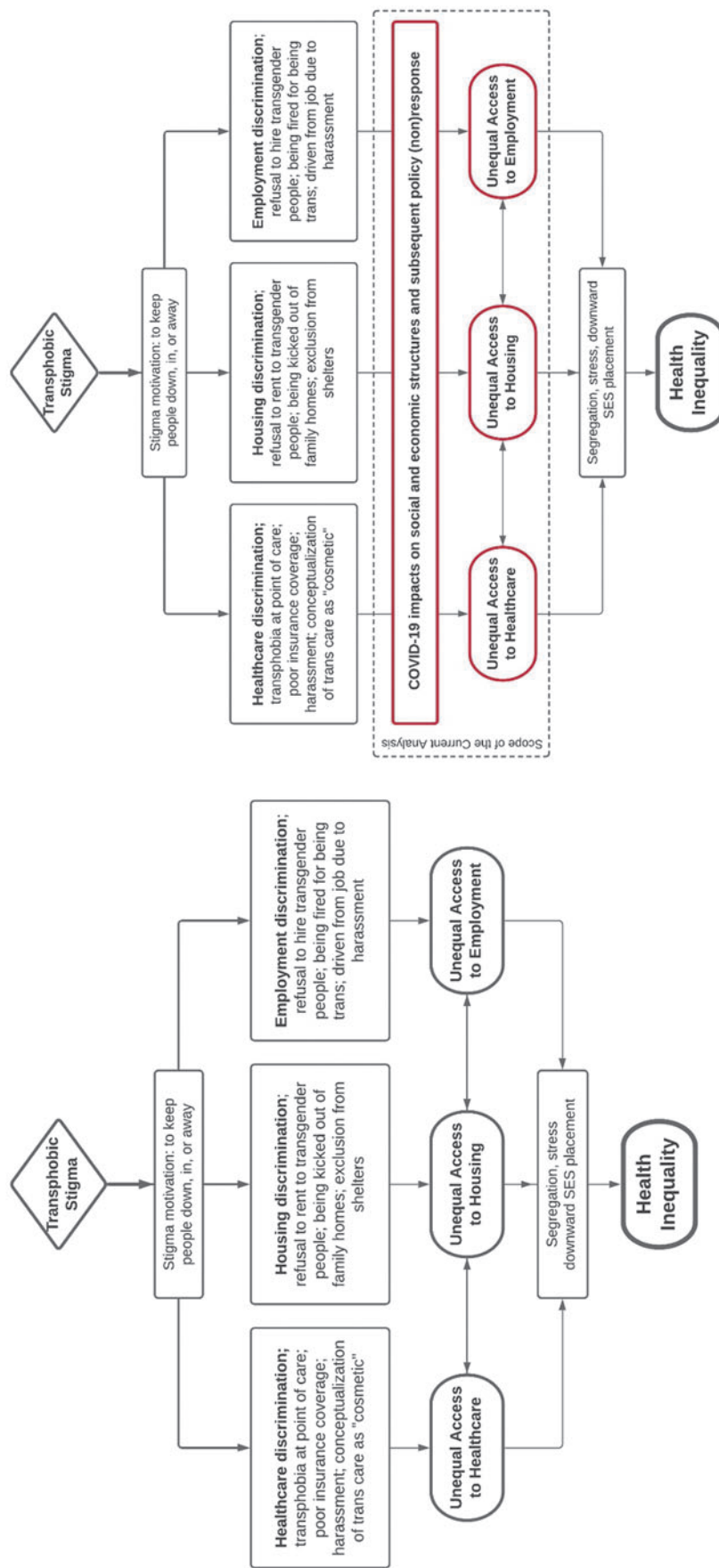


FIG. 1. Conceptual model of transphobic stigma as a fundamental cause of inequalities in health care, housing, employment, and health; Model is displayed both in preexisting context (left) and in the context of COVID-19 (right). The scope of the current analysis is indicated in the version at right.

following terms best describes your gender at this moment?" Response options included (1) Woman, (2) Man, (3) Gender nonbinary, (4) Questioning/Unsure, (5) Not listed, (6) Prefer not to respond, and (7) I'm not sure what this question is asking. Participants who selected "Not Listed" were asked to provide a write-in response.

We then assessed *gender modality*²⁶ by asking "Some people use the term transgender to describe themselves when their gender does not align with the sex they were assigned at birth. Do you identify as transgender?" Response options included (1) Yes, (2) No, (3) Prefer not to respond, (4) I'm not sure if I identify as transgender, and (5) I'm not sure what this question is asking.

Using responses to these questions, we constructed two analytic gender variables:

Gender, including: (1) Trans woman, (2) Trans man, (3) Nonbinary (trans), (4) Cisgender woman, (5) Cisgender man, (6) Nonbinary (not trans); Gender Modality, including: (1) Trans and Gender Diverse, and (2) Cisgender. For individuals who responded "Not Listed" to the *gender identity* question, we categorized gender based on written responses ($n=9$). For example, a participant who wrote "Third Gender" and responded "Yes" to the *gender modality* question was categorized as "nonbinary (trans)." Individuals who responded "Prefer not to respond" or "I'm not sure what this question is asking" ($n=12$) and individuals who indicated currently questioning either gender identity or modality ($n=50$) were excluded.

Only individuals who reported their gender identity as "man" or "woman" and who did not report a transgender gender modality were categorized as cisgender. Because nonbinary individuals may not identify as either trans or cis,²⁶ yet do not identify with the sex they were assigned at birth, we opted to group nonbinary individuals who did not identify as transgender alongside all individuals who identified as transgender for the purposes of analyses by gender modality. We use the terms "trans and gender diverse" to refer to this grouping to reflect the presence and nuance of this diversity of gender modalities.

Region. Participants were asked "Do you currently reside in the United States, Puerto Rico, or an overseas territory of the U.S.?" If yes, participants entered a five-digit ZIP code. 2010 Census Regions and Divisions were used to categorize ZIP codes into four regions: (1) Northeast, (2) Midwest, (3) South, and (4) West.

Social determinants of health

Employment. Participants were asked to respond "Yes" or "No" to the statement, "I have been fired, laid off, or have otherwise lost work due to COVID-19."

Housing. Participants were asked to respond "Yes" or "No" to two statements, (1) "I have lost housing due to COVID-19" and (2) "I am in danger of losing housing due to COVID-19." Participants who responded "Yes" to at least one of the two statements were considered impacted by homelessness and housing instability.

Medical care. Participants were asked to respond "Yes" or "No" to the statement, "I have had to delay or cancel other medical visits as a result of the virus which will disrupt my overall quality of life (e.g., a visit for hormones, PrEP, therapy, canceled gender confirming surgeries)."

Analytic sample

A total of 4082 participants provided informed consent and completed the screener. Data cleaning procedures were implemented to ensure real and unique responses, resulting in an entire data set of 952 individuals. A detailed description of data cleaning procedures is presented elsewhere.²⁵ The final analytic sample included 870 participants.

Statistical analysis

All data cleaning, recoding, and statistical analyses were conducted in RStudio version 1.3.1093 (RStudio, Boston, MA).^{27,28} Descriptive analyses were conducted, and bivariate and multivariable logistic regression models were used to estimate associations between gender and gender modality separately with each of the three outcomes. Multivariable logistic regression models were adjusted for age, race/ethnicity, and region. Odds ratios (ORs), adjusted odds ratios (aORs), and 95% confidence intervals (CIs) were calculated for all regression models.

Results

Univariate associations

The median age of the sample was 28 years. About 24.25% ($n=211$) participants were trans or gender diverse; 3.33% ($n=29$) were trans women, 7.70% ($n=67$) were trans men, 9.66% ($n=84$) were nonbinary (trans), and 3.56% ($n=31$) were nonbinary (not trans). About

59.77% of participants were white, 8.62% were Black, 10.57% were Latinx, 7.47% were Asian, 2.64% were American Indian/Alaskan Native, and 10.92% were multiracial. Participants were split evenly among the four major U.S. regions. Frequencies and crosstabs of all demographic variables by gender and gender modality are given in Table 1. Overall, 24.94% of the sample reported experiencing unemployment as a result of COVID-19, 8.05% reported homelessness ($n=21$; 2.41%) or housing instability ($n=52$; 5.98%), and 34.71% reported interruptions to medical care (data not shown).

Associations by gender modality and covariates

In both unadjusted and adjusted models (Table 2, Models A1 and A2), no significant differences in unemployment were detected by gender modality. American Indian/Alaska Native individuals were significantly less likely to report unemployment compared with white individuals (aOR=0.27; 95% CI: 0.04–0.93), although results among this group should be interpreted with caution because of small cell size ($n=23$).

Trans and gender diverse individuals were significantly more likely than cisgender individuals to report homelessness and housing instability (OR=1.96; 95% CI: 1.16–3.30) (Table 2, Model B1). After adjusting for covariates, trans and gender diverse participants had just over twice the odds of reporting homelessness and housing instability (aOR=2.12; 95% CI: 1.20–3.67) (Table 2, Model B2). Black individuals and multiracial individuals had significantly greater odds of reporting homelessness and housing instability than white participants (aOR=2.42, 95% CI: 1.07–5.07 and aOR=2.57, 95% CI: 1.28–4.99, respectively).

Compared with cisgender counterparts, trans and gender diverse individuals had significantly higher odds of reporting missing medical appointments in unadjusted models (OR=2.51; 95% CI: 1.83–3.46) (Table 2, Model C1). After adjusting for covariates (Table 2, Model C2), trans and gender diverse individuals had nearly three times the odds of reporting missing medical appointments (aOR=2.88; 95% CI: 2.05–4.07) compared with cisgender counterparts. By race/ethnicity, Latinx participants and multiracial participants had significantly greater odds than white participants of reporting medical care interruptions (aOR=1.66, 95% CI: 1.03, 2.68; aOR=1.71, 95% CI: 1.07–2.73).

Table 1. Sample Demographic Frequencies and Crosstabs by Gender Modality and Gender

Demographics	Gender modality			Gender					
	Total	Trans and gender diverse	Cisgender	Trans woman	Trans man	Nonbinary (trans)	Nonbinary (not trans)	Cisgender woman	Cisgender man
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Demographics									
Race/ethnicity									
White	520 (59.77)	129 (61.14)	391 (59.33)	18 (62.07)	40 (59.70)	52 (61.90)	19 (61.29)	189 (62.79)	202 (56.42)
Black	75 (8.62)	11 (5.21)	64 (9.71)	3 (10.34)	3 (4.48)	4 (4.76)	1 (3.23)	26 (8.64)	38 (10.61)
Latinx	92 (10.57)	16 (7.58)	76 (11.53)	0 (0.00)	5 (7.46)	8 (9.52)	3 (9.68)	27 (8.97)	49 (13.69)
Asian	65 (7.47)	16 (7.58)	49 (7.44)	2 (6.90)	4 (5.97)	7 (8.33)	3 (9.68)	22 (7.31)	27 (7.54)
American Indian/Alaska Native	23 (2.64)	5 (2.37)	18 (2.73)	2 (6.90)	3 (4.48)	0 (0.00)	0 (0.00)	5 (1.66)	13 (3.63)
Multiracial	95 (10.92)	34 (16.11)	61 (9.26)	4 (13.79)	12 (17.91)	13 (15.48)	5 (16.13)	32 (10.63)	29 (8.10)
Age, years median [IQR]	28.00 [23.00–40.75]	24.00 [21.00–29.00]	30.00 [24.00–46.00]	28.00 [25.00–37.00]	22.00 [20.00–27.00]	23.00 [21.00–27.00]	26.00 [20.00–40.00]	26.00 [21.00–34.00]	34.00 [27.00–53.00]
Region									
Northeast	212 (24.37)	54 (25.59)	158 (23.98)	5 (17.24)	14 (20.90)	27 (32.14)	8 (25.81)	77 (25.58)	81 (22.63)
Midwest	193 (22.18)	42 (19.91)	151 (22.91)	7 (24.14)	19 (28.36)	13 (15.48)	3 (9.68)	73 (24.25)	78 (21.79)
South	236 (27.13)	68 (32.23)	168 (25.49)	11 (37.93)	21 (31.34)	25 (29.76)	11 (35.48)	80 (26.58)	88 (24.58)
West	229 (26.32)	47 (22.27)	182 (27.62)	6 (20.69)	13 (19.40)	19 (22.62)	9 (29.03)	71 (23.59)	111 (31.01)
Total	870 (100.00)	211 (24.25)	659 (75.75)	29 (3.33)	67 (7.70)	84 (9.66)	31 (3.56)	301 (34.60)	358 (41.15)

Table 2. Adjusted and Unadjusted Logistic Regression Models of Unemployment, Homelessness and Housing Instability, and Medical Care Interruptions, by Gender Modality

Variables	Unemployment due to COVID-19						Homelessness and Housing Instability						Medical Care Interruptions					
	Model A1			Model A2*			Model B1			Model B2*			Model C1			Model C2*		
	n/Total	OR	95% CI	aOR	95% CI	n/Total	OR	95% CI	aOR	95% CI	n/Total	OR	95% CI	aOR	95% CI	n/Total	OR	95% CI
Gender modality																		
Cisgender	155/659	1		1		44/659	1		1		194/659	1		1		108/211	1	
Transgender/gender diverse	62/211	1.35	0.95–1.91	1.16	0.80–1.67	26/211	1.96	1.16–3.30	2.12	1.20–3.67	108/211	2.51	1.83–3.46	2.88	2.05–4.07			
Age, years Median [IQR]	27 [22.00–36.00]			0.99	0.98–1.00	30 [23.25–40.00]			1.01	0.99–1.03	27 [23.00–42.75]			1.01	1.00–1.02			
Race/ethnicity																		
White	135/520			1		35/520			1		176/520			1				
Black	16/75			0.74	0.40–1.31	10/75			2.42	1.07–5.07	15/75			0.56	0.30–1.01			
Latinx	18/92			0.67	0.37–1.15	6/92			1.05	0.38–2.48	39/92			1.66	1.03–2.68			
Asian	16/65			0.90	0.48–1.64	3/65			0.71	0.17–2.13	20/65			0.94	0.51–1.67			
American/Indian/Alaska Native [†]	2/23			0.27	0.04–0.93	1/23			0.62	0.03–3.13	8/23			1.04	0.40–2.49			
Multiracial	30/95			1.18	0.72–1.91	15/95			2.57	1.28–4.99	44/95			1.71	1.07–2.73			
Regions																		
Northeast	48/212			1		14/212			1		66/212			1				
Midwest	47/193			1.14	0.72–1.81	16/193			1.28	0.60–2.77	74/193			1.49	0.97–2.29			
South	70/236			1.50	0.97–2.32	20/236			1.20	0.59–2.51	72/236			0.91	0.60–1.39			
West	52/229			1.11	0.70–1.74	20/229			1.37	0.67–2.88	90/229			1.44	0.95–2.17			

Bold values indicate statistical significance.

*Models A2, B2, and C2 are adjusted for age, race/ethnicity, and region.

[†]Denominator of <30 within this group. Results may be unreliable owing to small sample size.

CI, confidence interval; OR, odds ratio; aOR, adjusted odds ratio.

Associations by gender and covariates

In unadjusted models by gender (Table 3, Model D1), nonbinary trans individuals were the only group significantly more likely than cisgender men to report unemployment (OR=1.73; 95% CI: 1.03–2.86). In adjusted models (Table 3, Model D2), the association was no longer significant. By race/ethnicity, American Indian/Alaska Native participants had significantly lower odds of reporting unemployment (aOR=0.27; 95% CI: 0.04–0.96). Compared with participants living in the Northwest region, participants from the South were 1.56 times more likely to report unemployment because of COVID-19 (aOR=1.56; 95% CI: 1.01–2.41).

Although odds of homelessness and housing instability were larger among all noncisgender participants than among cisgender men, there were no significant differences in either unadjusted or adjusted models (Table 3, Models E1 and E2). In the adjusted model, Black participants and multiracial participants had significantly higher odds of reporting homelessness or housing instability (aOR=2.48, 95% CI: 1.09–5.23 and aOR=2.59, 95% CI: 1.28–5.04, respectively) than white participants.

Nonbinary trans individuals, trans men, and trans women all had approximately three times the odds of reporting medical care interruptions compared with cisgender men (OR=2.62, 95% CI: 1.61–4.26; OR=3.12, 95% CI: 1.83–5.35; OR=2.55, 95% CI: 1.18–5.52, respectively) in the unadjusted model (Table 3, Model F1). In the adjusted model (Table 3, Model F2), the magnitude of all odds increased and remained significant (aOR=3.48, 95% CI: 2.04–5.97; aOR=4.12, 95% CI: 2.30–7.46; aOR=3.29, 95% CI: 1.48–7.40, respectively). Results among trans women should be interpreted with caution because of the small cell size ($n=29$). By race/ethnicity, Latinx participants and multiracial participants had significantly greater odds of medical care interruptions (aOR=1.74, 95% CI: 1.07–2.82; aOR=1.75, 95% CI: 1.09–2.80) than white individuals in the adjusted models.

Discussion

There was evidence to support two of our three hypotheses. We found statistically significant disparities in loss of housing by gender modality, and robust significant disparities in medical care interruptions by both gender modality and gender. Hypotheses were not statistically supported for unemployment. Overall, findings lend support to the theory that the socioeco-

nomics impacts of the COVID-19 pandemic across key SDoH may be inequitably impacting trans and gender diverse populations in the United States. In alignment with our conceptual model (Fig. 1), our findings affirm prior research demonstrating that trans populations have had limited access to health care during the pandemic.^{21,22,24} Furthermore, our results add new detail: although unlike prior studies,²² we did not observe significant differences in loss of employment, experiences of homelessness and housing instability were significantly greater among trans people.

Taking into account our own findings and findings from other COVID-19 studies of trans populations,^{22,24} available evidence supports the use of our conceptual model as a framework for research related to trans health disparities in the context of COVID-19, with the caveat that we were not able to empirically test our full model in this analysis, and longitudinal studies that can do so are needed. Work that expands our model to more explicitly consider the racialized nature of transphobic stigma²⁹ will also be needed.

Prior research has found that unstable housing is a predictor of a number of poor health outcomes among trans people, ranging from poor mental health to HIV seroconversion,^{30,31} among others. Our findings therefore support the need for additional resources to be directed to supporting housing security and stability for trans populations. Similarly, prior research has established that lack of health care access or avoidance of care owing to stigma can have wide-ranging negative consequences for trans people's mental and physical health,³² emphasizing the importance of ensuring that health care systems and care providers are capable of delivering high-quality, affirming, and affordable care for trans individuals, and of directing COVID-19 relief funding to health centers serving large trans or gender diverse populations.

The relative dearth of research dedicated to understanding and addressing the needs and experiences of trans populations during COVID-19 should be understood as a manifestation of institutional transphobia. Data advocacy efforts are needed to ensure that public health surveillance always includes measures of gender and gender modality.²⁰ Ongoing community-engaged research elucidating how trans communities are differentially impacted by COVID-19 is also urgently needed.²⁰ Trans leadership must be fully embraced in these efforts; researchers and practitioners of clinical and public health must advocate to support institutional changes in line with recommendations from trans

Table 3. Adjusted and Unadjusted Logistic Regression Models of Unemployment, Homelessness and Housing Instability, and Missing Medical Appointments, by Gender

Variables	n/Total	Unemployment due to COVID-19				Homelessness and housing instability				Medical care interruptions			
		Model D1		Model D2*		Model E1		Model E2*		Model F1		Model F2*	
		OR	95% CI	aOR	95% CI	OR	95% CI	aOR	95% CI	OR	95% CI	aOR	95% CI
		n/Total				n/Total				n/Total			
Gender													
Cis man	87/358	1		1		24/358	1	1		106/358	1	1	
Cis woman	68/301	0.91	0.63–1.30	0.73	0.49–1.08	20/301	0.99	0.53–1.83	1.11	0.57–2.16	0.98	0.70–1.37	1.2
Nonbinary (trans)	30/84	1.73	1.03–2.86	1.28	0.73–2.20	10/84	1.88	0.83–4.00	2.24	0.92–5.24	2.62	1.61–4.26	3.48
Nonbinary (not trans)	11/31	1.71	0.77–3.66	1.34	0.59–2.93	4/31	2.06	0.58–5.83	2.33	0.63–6.88	1.31	0.59–2.78	1.52
Trans man	16/67	0.98	0.52–1.77	0.69	0.35–1.32	9/67	2.16	0.91–4.74	2.52	0.98–6.17	3.12	1.83–5.35	4.12
Trans woman†	5/29	0.65	0.21–1.62	0.51	0.16–1.30	3/29	1.61	0.37–5.00	1.69	0.37–5.50	2.55	1.18–5.52	3.29
Age, years Median [IQR]	27.00 [22.00, 36.00]			0.98	0.97–1.00	30.00 [23.25, 40.00]			1.01	0.99–1.03			1.02
Race/Ethnicity													
White	135/520			1		35/520		1		176/520		1	
Black	16/75			0.71	0.38–1.27	10/75		2.48	1.09–5.23	15/75		0.57	0.30–1.03
Latinx	18/92			0.62	0.34–1.07	6/92		1.06	0.38–2.51	39/92		1.74	1.07–2.82
Asian	16/65			0.86	0.45–1.56	3/65		0.73	0.17–2.17	20/65		0.98	0.53–1.75
American Indian/ Alaska Native‡	2/23			0.27	0.04–0.96	1/23		0.64	0.03–3.25	8/23		1.03	0.39–2.50
Multiracial	30/95			1.17	0.71–1.89	15/95		2.59	1.28–5.04	44/95		1.75	1.09–2.80
Regions													
Northeast	48/212			1		14/212		1		66/212		1	
Midwest	47/193			1.2	0.75–1.91	16/193		1.28	0.60–2.79	74/193		1.46	0.95–2.26
South	70/236			1.56	1.01–2.41	20/236		1.2	0.58–2.51	72/236		0.91	0.60–1.39
West	52/229			1.11	0.71–1.76	20/229		1.38	0.67–2.90	90/229		1.45	0.96–2.20

Bold values indicate statistical significance.

*Models D2, E2, and F2 are adjusted for age, race/ethnicity, and region.

†Denominator of <30 within this group. Results may be unreliable owing to small sample size.

scholars.³³ Furthermore, public health practitioners and policymakers should look to trans community leaders to identify approaches to trans health promotion that align with trans liberation.³⁴ As one example of an immediate-term action, clinical and public health researchers and practitioners should materially support trans-led public health interventions, such as community-based mutual aid efforts to address the impacts of COVID-19.

Our results also indicate that further development of measures of gender is necessary to capture the diversity of trans and gender diverse populations. In our sample, some nonbinary participants identified as trans, whereas others did not. Furthermore, we observed some disparities among the former group, but not the latter. The prevalence of endorsing both trans and non-trans gender modality among nonbinary participants should challenge common assumptions regarding a “cis-trans binary” of gender modality.²⁶ Additional work beyond the scope of this study is needed to articulate potential differences in experiences of SDoH by gender modality among nonbinary individuals. Furthermore, future studies should utilize measures which allow participants to specifically identify themselves as transgender, cisgender, or neither.

Limitations

There were limitations to this study. First, the study was vulnerable to sampling bias because of our recruitment methodology, which drew a convenience sample using social media advertising. The effect of this sampling bias is evident in our second limitation: an overrepresentation of white respondents and a relatively small sample of trans and gender diverse respondents. The overrepresentation of white respondents detracts from the generalizability of our results to trans populations more broadly; experiences of transphobia are racialized,²⁹ and Black, Indigenous, Latinx, and other trans people of color often experience greater disparities in SDoH compared with white peers.¹⁹ Meanwhile, although trans participants were represented, our sample of trans women in particular was small. A larger, more diverse sample may have revealed greater inequities than we observed. As we did not observe disparities in unemployment, it is also possible that our sample of trans participants was higher SES than a national population and thus less vulnerable to volatile employment markets. This is particularly possible given the racial bias in our sample. Finally, our cross-sectional design limits our ability to make

causal inferences—longitudinal research will be required to address remaining uncertainties and gaps in our analysis.

Conclusions

There is potential for disparities in housing instability and medical care access to lead to widening health inequities in the long term. Our conceptual model can be used to advance understanding of the impact of COVID-19 on trans populations and the long-term health implications of these impacts. Racially/ethnically diverse prospective cohort studies of trans populations are particularly needed to better understand these dynamics.

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Authors' Contributions

D.F. conceptualized the article, developed the analytic plan, and wrote the first draft. J.X. cleaned and managed all data, developed the analytic plan, carried out all analyses, and wrote the first draft. G.P.II. developed the analytic plan and provided mentorship to J.X., X.W., and C.W.C. in carrying out all analyses. Y.B.F., E.S.F., and A.K.K. wrote the first draft. Y.B.F. and A.K.K. completed a literature review for the article. X.W. and C.W.C. cleaned and managed all data, and assisted with carrying out some analyses. L.B.B. conceptualized the article and provided mentorship to D.F. and J.X. in the development of the analytic plan. G.P.II. and L.B.B. served as lead investigators for the study. All authors contributed significantly to the drafting and editing of the article, including making significant intellectual contributions to the framing and interpretation of results in later drafts of the article. All authors have approved of the final version of the article and agree to be accountable for all aspects of the work.

Author Disclosure Statement

The authors declare no potential or actual conflicts of interest.

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References

- Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Available at: <https://health.gov/healthypeople/objectives-and-data/social-determinants-health> Accessed July 15, 2021.
- Pew Research Center. Economic Fallout From COVID-19 Continues To Hit Lower-Income Americans the Hardest. 2020. Available at: <https://www.pewresearch.org/social-trends/2020/09/24/economic-fallout-from-covid-19-continues-to-hit-lower-income-americans-the-hardest/> Accessed July 15, 2021.
- Benfer EA, Vlahov D, Long MY, et al. Eviction, Health Inequity, and the Spread of COVID-19: Housing Policy as a Primary Pandemic Mitigation Strategy. *J Urban Health*. 2021;98:1–12.
- Czeisler ME, Marynak K, Clarke KEN, et al. Delay or avoidance of medical care because of COVID-19-related concerns - United States, June 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69:1250–1257.
- Karaye IM, Horney JA. The impact of social vulnerability on COVID-19 in the U.S.: an analysis of spatially varying relationships. *Am J Prev Med*. 2020;59:317–325.
- Okonkwo NE, Aguwa UT, Jang M, et al. COVID-19 and the US response: accelerating health inequities. *BMJ Evid-Based Med*. 2020;26:176–179.
- Hatzenbuehler ML, Phelan JC, Link BG. Stigma as a fundamental cause of population health inequalities. *Am J Public Health*. 2013;103:813–821.
- Phelan JC, Link BG, Dovidio JF. Stigma and prejudice: one animal or two? *Soc Sci Med* (1982). 2008;67:358–367.
- James SE, Herman JL, Rankin S, et al. Executive Summary of the Report of the 2015 US Transgender Survey. Washington, DC: National Center for Transgender Equality, 2016.
- Kcomt L, Gorey KM, Barrett BJ, McCabe SE. Healthcare avoidance due to anticipated discrimination among transgender people: a call to create trans-affirmative environments. *SSM Popul Health*. 2020;11:100608.
- Learmonth C, Viloria R, Lambert C, et al. Barriers to insurance coverage for transgender patients. *Am J Obstet Gynecol*. 2018;219:272.e271–e272.e274.
- James SE, Herman JL, Rankin S, et al. The Report of the 2015 US Transgender Survey. Washington, DC: National Center for Transgender Equality, 2016.
- Safer JD, Coleman E, Feldman J, et al. Barriers to healthcare for transgender individuals. *Curr Opin Endocrinol Diabetes Obes*. 2016;23:168–171.
- Beltran T, Allen AM, Lin J, et al. Intersectional discrimination is associated with housing instability among trans women living in the San Francisco Bay area. *Int J Environ Res Public Health*. 2019;16:4521.
- Clark K, Fletcher JB, Holloway IW, Reback CJ. Structural inequities and social networks impact hormone use and misuse among transgender women in Los Angeles county. *Arch Sex Behav*. 2018;47:953–962.
- Glick JL, Lopez A, Pollock M, Theall KP. "Housing insecurity seems to almost go hand in hand with being trans": housing stress among transgender and gender non-conforming individuals in New Orleans. *J Urban Health*. 2019;96:751–759.
- Leppel K. Transgender men and women in 2015: employed, unemployed, or not in the labor force. *J Homosex*. 2021;68:203–229.
- Kang JL, Williamson LM. Unemployment rate nears prerecession level by end of 2015. Washington, DC: U.S. Bureau of Labor Statistics April 2016, 2016.
- Grant JM, Mottet LA, Tanis J, et al. Injustice at Every Turn: A Report of the National Transgender Discrimination Survey. Washington, DC: National Center for Transgender Equality and National Gay and Lesbian Task Force, 2011.
- Phillips G, Felt D, Ruprecht MM, et al. Addressing the disproportionate impacts of the COVID-19 pandemic on sexual and gender minority populations in the United States: actions toward equity. *LGBT Health*. 2020;7:279–282.
- Ruprecht MM, Wang X, Johnson AK, et al. Evidence of social and structural COVID-19 disparities by sexual orientation, gender identity, and race/ethnicity in an urban environment. *J Urban Health*. 2021;98:27–40.
- Kidd JD, Jackman KB, Barucco R, et al. Understanding the impact of the COVID-19 pandemic on the mental health of transgender and gender nonbinary individuals engaged in a longitudinal cohort study. *J Homosex*. 2021;68:592–611.
- U.S. Bureau of Labor Statistics. Employment Situation News Release, July 2020 [press release]. Available at: https://www.bls.gov/news.release/archives/empisit_08072020.htm Accessed July 15, 2021.
- Restar AJ, Jin H, Jarrett B, et al. Characterising the impact of COVID-19 environment on mental health, gender affirming services and socioeconomic loss in a global sample of transgender and non-binary people: a structural equation modelling. *BMJ Global Health*. 2021;6:e004424.
- Phillips II G, Xu J, Ruprecht MM, et al. Associations with COVID-19 symptoms, prevention interest, and testing among sexual and gender minority adults in a diverse national sample. *LGBT Health*. 2021;8:322–329.
- Ashley F. 'Trans' is my gender modality: a modest terminological proposal. In: *Trans Bodies, Trans Selves*. 2nd ed. (Erickson-Schroth L; ed). Oxford, England: Oxford University, 2021.
- R Core Team. R: A Language and Environment for Statistical Computing. Vienna, Austria: R Foundation for Statistical Computing, 2020.
- RStudio Team. RStudio: Integrated Development for R. Boston, MA: RStudio, Inc., 2019.
- Snorton CR, Haritaworn J. Trans necropolitics: a transnational reflection on violence, death, and the trans of color afterlife. In: *Transgender Studies Reader*. 2nd ed. (Stryker S, Aizura, A.; eds). New York: Routledge, 2013, pp. 66–76.
- Fletcher JB, Kisler KA, Reback CJ. Housing status and HIV risk behaviors among transgender women in Los Angeles. *Arch Sex Behav*. 2014;43:1651–1661.
- Glick JL, Lopez A, Pollock M, Theall KP. Housing insecurity and intersecting social determinants of health among transgender people in the USA: a targeted ethnography. *Int J Transgend Health*. 2020;21:337–349.
- Seelman K, Colon-Diaz M, LeCroix R, et al. Transgender noninclusive healthcare and delaying care because of fear: connections to general health and mental health among transgender adults. *Transgend Health*. 2017;2:17–28.
- Restar AJ, Operario D. The missing trans women of science, medicine, and global health. *Lancet*. 2019;393:506–508.
- Feinberg L. Transgender liberation: a movement whose time has come. New York, NY: World View Forum, 1992.

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Abbreviations Used

aOR = adjusted odds ratio
 CI = confidence interval
 Cis = cisgender
 OR = odds ratio
 SDoH = social determinants of health
 SES = socioeconomic status
 SGM = sexual and gender minority
 Trans = transgender